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ABSTRACT

This publication discusses application of the project management process to the management of an instructional program implementation effort. It is intended to supplement the implementation manuals that usually accompany new instructional programs to aid school district personnel in successfully implementing new instructional programs. The publication consists of a brief introduction and three main sections. The Overview of the Project Management Process section defines the concept of project and describes the basic activities involved in the project management process. The Management of an Implementation Project section defines the concept of an implementation project and discusses all the activities involved in the four phases of an implementation project. The Conclusion briefly summarizes the content of the previous sections and suggests sources of additional information or assistance regarding the management of an implementation project. (Author/JG)

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A PROJECT MANAGEMENT APPROACH TO INSTRUCTIONAL PROGRAM IMPLEMENTATION

by

Rodney J. Ball
and
C. Peter Cummings

Publication No. OP-306

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May, 1973

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ABSTRACT

A PROJECT MANAGEMENT APPROACH TO

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In order to improve instruction in our schools, educators are frequently turning to the many new instructional programs that are being developed today. The implementation of these new programs is, however, a difficult effort that can benefit from being directed from a project management approach. This document details the application of the project management process to the management of an instructional program implementation effort. This document when used with the implementation manuals that accompany new instructional programs provides a school district with the knowledge necessary to successfully implement a new instructional program.

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I. Introduction

Purpose

The improvement of instruction in our schools is a most important concern of all educators. In order to improve instruction, educators are frequently turning to the many new instructional programs that are being developed today. Also, teachers and other professional educators have many of their own ideas for modifying and improving the instructional programs they currently operate. But, as all those familiar with school administration and pupil instruction know, the implementation of these new programs or modifications to existing programs is a difficult task.

This document represents an application of the project management process to the management of instructional program implementation. The implementation manuals that accompany new instructional programs (such as the Administrative Training Program used with IPI programs) provide the detailed instructions and/or recommendations for performing many of the tasks identified in this document. Thus, this document and the implementation manual accompanying a program provide a school district with the knowledge necessary to successfully implement a new instructional program.

Content Overview

This document consists of four sections: Introduction, Overview of the Project Management Process, Management of an Implementation Project and Conclusion. The Introduction describes the purpose of the document, and gives an overview of the content.

The overview of the Project Management Process section defines the concept of project and describes the basic activities involved in the phases of the project management process. This section introduces the structure to

be used for presenting most of the content of the document.

The Management of an Implementation Project section defines the concept of an implementation project and discusses all of the activities involved in each of the four phases of an implementation project. Numerous examples are included in the discussion.

The Conclusion briefly summarizes the content of the document and suggests where one might go to obtain additional information or assistance regarding the management of an implementation project.

II. Overview of the Project Management Process

The Project

A project is a complex, goal-oriented activity which has a finite life span, a cost limit and some uncertainty about the method of accomplishing its goal. Goal-oriented means that the activity is aimed toward some identifiable end-product or capability. It is characteristic of project activity that this end-product or capability be defined or specified in sufficient detail (as performance specifications) that the outcome, and a means for evaluating the outcome, are readily apparent to the individuals involved in the project and to individuals monitoring, auditing and evaluating the project.

Uncertainty is a major characteristic of projects because they are usually a unique, or once-through, kind of effort, and often there is uncertainty about how the goal will be accomplished. The amount of uncertainty varies from project to project, depending upon such factors as the uniqueness of the effort and the inherent complexity of the overall project task. Staff inexperience also results in considerable uncertainty.

Although there is some uncertainty with regard to how the project will proceed, there is little uncertainty regarding when it will begin and end. A project has specified start and completion dates. It has a finite life span and, consequently, can be thought of as a temporary effort.

Finally, the project goal is achieved within a specified cost limit. Project efforts involve the use of resources such as time, people, facilities, materials, equipment and services. These resources are usually translated into dollar amounts in a budget document which specifies the project cost limit that is not to be exceeded.

In summary, a project has a specified goal to develop an end-product or capability, performance specifications, some uncertainty about how the goal is to be achieved, start and completion dates and a cost limit.

The Project Management Process

The project management process consists of planning, preparation, operations and termination phases of a project. These phases are illustrated in Figure #1.

The project planning phase includes setting goals for the project; specifying the work to be done by presenting a descriptive flow of the tasks; determining time schedule, cost and manpower needs; and preparing a budget.

The preparation phase involves obtaining and organizing personnel, equipment, materials, facilities and information, so that the project can be initiated and operated as planned.

The operations phase is concerned with the actual conduct or operation of the project. Regardless of the best planning efforts, actual operations do not always go as planned. The project director must have a system or procedure for knowing at all times the status of the project so that problem areas can be identified and corrective actions taken. Problem analysis and corrective actions are primary management activities during the operations phase of a project.

Finally, the termination phase includes those activities or efforts dealing with the ending of the project. Such activities include reporting about the project and transferring personnel, records and equipment. This phase may focus upon stopping a project in progress, ending a project when its goals have been achieved, or integrating the project activities into an on-going institutional program upon completion of the project. In the last case the end-product of the project is an on-going program (a new program or a modification of a previously existing program).

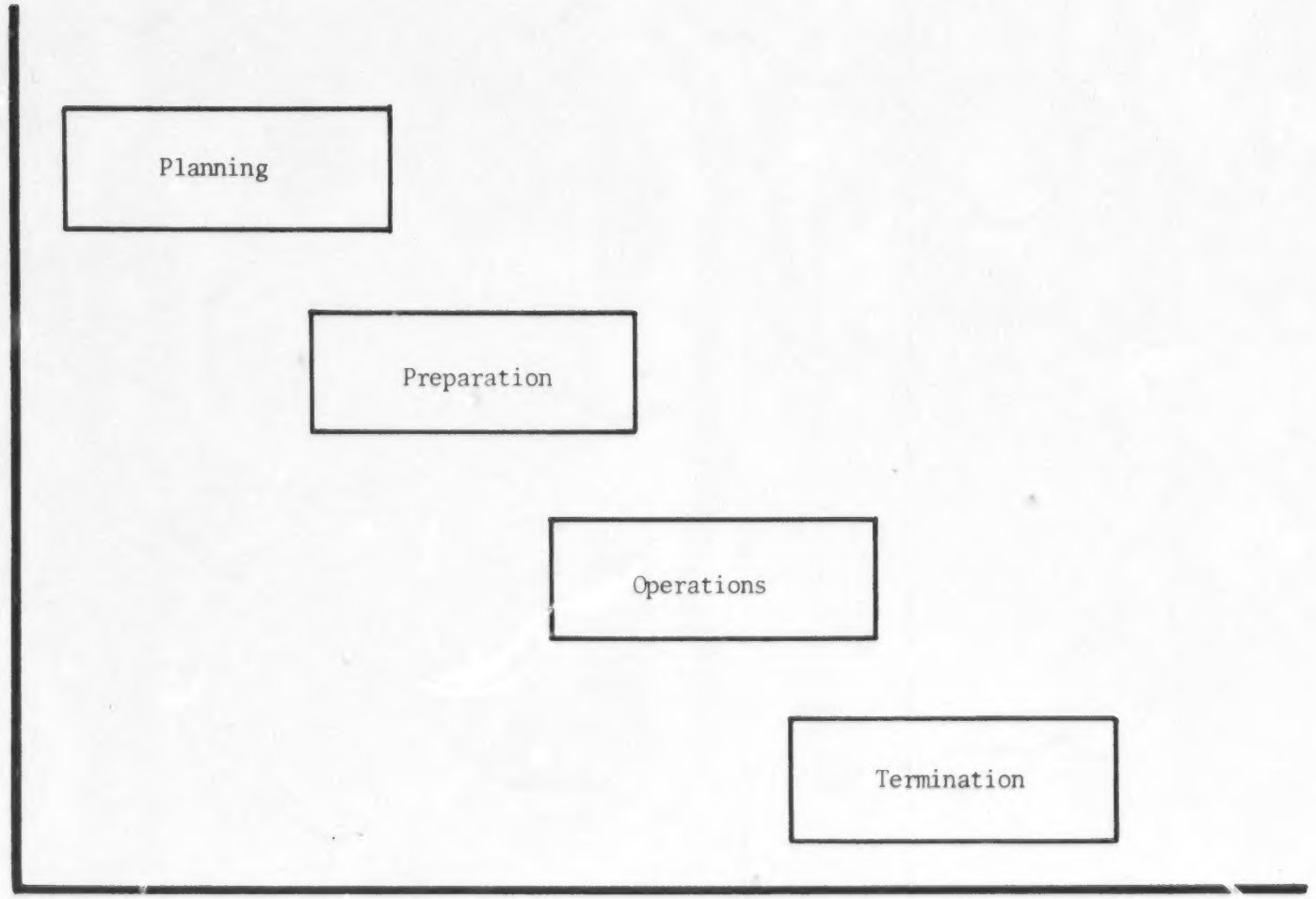

Figure #1--Phases in the Project Management Process

III. Management of an Implementation Project

Implementation Project

An effort to implement a new instructional program satisfies the definition of a project. It is complex and has a goal, finite life span, cost limit and some uncertainty about the method of accomplishing its goal. Efforts to implement new instructional programs frequently involve staff at various levels (administrators, supervisors, teachers, counselors and aides) from several school buildings and offices, each performing a variety of project tasks. Such efforts have as their goal the implementation of new instructional materials and procedures into an existing school program. This implementation is accomplished within a finite period of time, often one or two years, and within the bounds set by a fixed amount of money that has been budgeted for the effort. Since the instructional materials and procedures are usually quite new to the staff, a considerable amount of uncertainty exists regarding how the transition from the old way to the new way will be accomplished, and how successful the new program will be once it is implemented.

An effort to implement a new instructional program, or a major instructional program modification, will be referred to as an instructional program implementation project or simply as an implementation project in this Supplement. The management of an implementation project is similar to the management of any project and, consequently, follows the same four phases of the project management process -- project planning, preparation, operations and termination.

There are distinct advantages to viewing the implementation of a new instructional program as a project and employing skills and techniques of project management in accomplishing the implementation. First, such a viewpoint focuses attention on the careful and thorough planning that is

necessary for successful implementation. Goals and objectives are carefully defined, plans which detail the time sequence for the various activities are made, and resource utilization is planned. This careful planning, including the detailed definition of objectives and procedures, is the basis for designing good evaluation plans.

Second, the project management approach focuses attention on the many preparation activities that must be performed before the actual instruction of pupils under the new program can begin. All these activities, such as staff training and the ordering of materials and equipment, should be specified and performed according to a schedule in order to insure that the new program can begin as planned.

Third, attention is focused on the monitoring of the implementation effort from the planning phase through the termination phase. The project management process permits an examination of the deviation of operations from the plan, and thereby makes it possible to more readily identify potential problems that may arise in the operation of the implementation project.

Finally, attention is focused on the activities necessary for the transition of the new program into the regular on-going instructional program of the school. This transition occurs when the goals of the implementation effort have been met. For example, if a new program is introduced in the beginning of a school year, then by May or June the implementation project goals may be met. At this time the concern is often planning for next year. This planning, however, is usually not of the magnitude or complexity that it was for the first year. Also, there is far less uncertainty regarding the activities to be planned and performed. Thus, the new program is no longer a project, but is part of the regular school program, requiring only periodic modification.

The sections which follow discuss in detail all of the important activities involved in the operation and management of an implementation project. These activities are grouped under the four phases of the project management process described above. This grouping of activities is illustrated in Figure #2. In order to help clarify these activities, frequent use of examples is made. These examples are based upon a project designed to implement an Individually Prescribed Instruction (IPI) Reading Program developed by Research for Better Schools, Inc. (RBS) into a local school district.

Planning Implementation

The planning of an implementation project can be viewed as consisting of two types of planning. Prior to the actual detailed planning of an implementation project, there are activities which might be called "pre-planning". Typical pre-planning activities are: (1) visitations to other school districts that have, or are currently, implementing the desired program; (2) interaction with the developer of the program; (3) development of a "mini"-plan; and (4) the appointment of a project manager. These activities are discussed below.

Before a final decision is made to implement a new instructional program, it is usually necessary to obtain detailed information about the program and its implementation. This information is usually presented in the form of a "mini"-plan to the decision-makers of the district (the superintendent and/or school board) for their approval.

This information is usually obtainable through visits to school districts where the new program is currently operating as a regular part of a school's instructional program or is in the process of being implemented. Further information is also usually available through the developers of the program or

PLANNING PHASE ACTIVITIES	PREPARATION PHASE ACTIVITIES	OPERATIONS PHASE ACTIVITIES	TERMINATION PHASE ACTIVITIES
1. Project definition	1. Obtain staff	1. Orient pupils	1. Inform project personnel
2. Work flow development	2. Train staff	2. Instruct pupils under the new program	2. Prepare the final report
3. Time estimation and scheduling	3. Orient persons not directly involved	3. Disseminate information	3. Retain important records and documents
4. Resource estimation and scheduling	4. Obtain, distribute and install materials and equipment	4. Modify program content and/or procedures	4. Write the project history.
5. Cost estimation and budgeting	5. Arrange for the use of facilities	5. Administer measurement instruments	5. Plan for next year.
	6. Develop evaluation plan	6. Score and analyze evaluation data	
	7. Obtain or develop measurement instruments	7. Synthesize data and report results.	
	8. Develop an information system		

Figure 2 -- Activities of the Four Phases of the Project Management Process for an Instructional Program Implementation Project.

their field organization. For example, prior to implementing IPI Reading, it is customary for school administrators and selected teachers to visit other school districts that are currently operating the program. In these districts the actual operation of the program can be observed. In addition, much additional information can be obtained by talking with the personnel who are operating the program. Also, RBS has a very capable Network Training/ Implementation Component that provides schools with valuable information about specific IPI programs and their implementation. Once a district decides to implement an IPI program, the personnel of the Network Training/Implementation Component provide periodic consultative services.

The information obtained by school visitations and consultation with the program developers is summarized in a mini-plan. This mini-plan should present the following information to the district's decision-makers.

- o the purpose and goal of the proposed implementation project.
- o the major tasks or missions of the project.
- o the benefits of the program for the pupils.
- o the personnel and physical resources required.
- o the expected cost of the project.

Once the proposed implementation project is approved, a project manager should be chosen. A project manager is critical to the success of any project. The logical choice for project manager is someone who has been involved in the pre-planning activities, and is, consequently, quite familiar with the program which he will begin planning and preparing for. Often this person is a curriculum coordinator in the district. Since the project manager does much of the detailed project planning, he should be selected soon after the decision to implement the new program has been made. Following his

selection the implementation project moves into the first phase of the project management process -- the planning phase.

The activities involved in the project planning phase are: (1) project definition, (2) work flow development, (3) time estimation and scheduling, (4) resource estimation and scheduling, and (5) cost estimation and budgeting. The planning of an implementaion project will be presented in terms of these activities in the sections which follow.

Project Definition

Project definition is concerned with the written specification of the project goal, missions (major tasks), tasks and subtasks, and their arrangement into a hierarchy. The output of this step is the specification of all the tasks that must be performed in order to implement the new instructional program. The hierarchy of goals, missions and tasks is referred to as the work breakdown structure (WBS). The WBS is usually developed by the project manager with help from those who eventually will work on the project. The superintendent and/or other central office administrators and principals can be of help in reviewing the document.

A sample work breakdown structure for the implementation of a new instructional program is presented in Figure #3.* The typical missions in an implementation project are: (1) to staff, train and orient, (2) to obtain, distribute, and install materials, equipment and facilities, (3) to operate the new program, and (4) to evaluate the new program.

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*If you are not familiar with work breakdown structures, Figure #3 may appear at first to be a bit confusing. The creation of work breakdown structures is detailed in Project Management Basic Principles developed by the Administering for Change Program of Research for Better Schools, Inc., 1700 Market Street, Philadelphia, Pa. 19103. The project manager of an implementation project should be familiar with them.

PROJECT GOAL	MISSIONS	TASKS	SUB-TASKS
Implement New Instructional Program	Staff, Train and Orient	Obtain Staff 1.1	Obtain Teaching Staff 1.11
			Obtain Support Staff 1.12
		Train Staff 1.2	Train Administrative Staff 1.21
			Train Teaching Staff 1.22
			Train Support Staff 1.23
		Orient Persons Not Directly Involved 1.3	Orient Non-Involved Administrators and Teachers 1.31
	1.0*		Orient Parents 1.32
			Orient Community Members 1.33
	Obtain, Distribute, and Install Materials, Equipment, and Facilities	Obtain, Distribute, and Install Materials and Equipment 2.1	Order Materials and Equipment 2.11
			Check and Inventory Materials and Equipment Received 2.12
			Distribute and Arrange Materials 2.13
			Install Equipment 2.14
		Arrange for the use of Facilities 2.2	Specify Facilities Required 2.21
			Reserve and Schedule Existing Facilities 2.22
			Modify some Existing Facilities 2.23
	2.0		Construct New Facilities 2.24
	Operate New Program	Orient Pupils 3.1	(This section is determined by the instructional materials themselves) 3.11
		Instruct Pupils 3.2	(This section is determined by the instructional materials themselves) 3.21 3.22 ⋮
		Disseminate Information 3.3	Report to Superintendent and School Board 3.31
			Report to Non-Involved Administrators and Teachers 3.32
			Report to Parents and Community 3.33
			Conduct Visitations 3.34
	3.0	Modify Program Content and/or Procedures 3.4	(This section is determined by the local school district) 3.41
	Evaluate New Program	Develop Evaluation Plan 4.1	(This section is determined by the local school district) 4.11
		Obtain or Develop Measurement Instruments 4.2	(This section is determined by the nature of the program) 4.21 ⋮
		Administer Measurement Instruments 4.3	(This section is determined by the nature of the instruments selected) 4.31 ⋮
		Score and Analyze Data 4.4	(This section is determined by the nature of the instruments selected) 4.41 ⋮
	4.0	Synthesize and Report Results 4.5	(This section interacts with Section 3.3). 4.51 ⋮

* These numbers could be used as account numbers in the project-referenced budget.

Figure #3--Sample Work Breakdown Structure for an Instructional Program Implementation Project

Staff, Train and Orient. -- The first mission in an implementation project, staff, train and orient, consists of the following tasks: (1) select and/or hire both teaching and support staff, (2) train the staff in the methodology or procedures of the new program, and (3) orient persons who are not directly involved in the program activities.

These are important activities. The quality and training of the project staff will have an overriding effect upon the success of the project. The approval of those outside the project will determine the level of effort needed to implement the end-product. In practice the project staff should include persons who were responsible for selecting the instructional innovation that the project will implement. Such participation assures both project staff support of, and involvement in, the implementation process, and the success of the new program.

It may also be necessary to hire additional professional and/or support staff for the new program. For example, in implementing IPI Reading, it is customary to have an aide for each classroom. If the school does not currently use aides in their instructional program, aides will have to be hired well in advance of the date scheduled for the start of the new classes. The first step in hiring aides would be to specify their role and how many will be needed. Then, descriptions which detail the responsibilities of the job and the training and experience expected of applicants, can be written for the role.

Although the selection and/or hiring of staff is the responsibility of the project manager, certain central office personnel and school principals can provide valuable assistance in this task.

Once the staff members for the new program have been obtained, they must be trained. This training (1.2 on Figure #3) involves learning the

procedures of the program and any new skills that may be required in the various positions. For example, when implementing IPI Reading into a school building, it is required that the principal be trained first. The principal then directs the training of the teachers and aides in learning procedures (such as how and when to administer and score the various tests in the program) and skills (such as being able to write correct prescriptions for individual pupils based upon their test results) required for the program.

In addition to training staff members directly involved in the implementation of a new program, it is necessary that others not directly involved be oriented to the program. Persons to include in this orientation might be other teachers in the building or district, parents of pupils in the program and other interested community members. If, for example, the new program is being implemented in grades 1-6, then the seventh grade teachers would certainly be expected to be interested in knowing what the pupils are learning. When implementing IPI Reading, it is logical to expect parents to wonder why their children are not getting letter grades on their report cards anymore and to ask what it is their children are learning.

Obtain, Distribute and Install Materials, Equipment and Facilities. -- The second mission in an implementation project is to obtain, distribute and install materials, equipment and facilities. This mission consists of these tasks: (1) obtain materials and equipment and (2) arrange for the use of facilities.

The task of obtaining materials and equipment can be divided into the following four subtasks: (1) order materials and equipment; (2) check and inventory materials and equipment received; (3) distribute and arrange materials; and (4)install equipment. The ordering of materials and equipment is

an important and sometimes confusing task. In addition to ordering the correct amount or number of materials, the appropriate types and combinations of materials for the particular program planned must be specified. In implementing IPI Primary Reading, for example, it is necessary to specify the appropriate Programmed Readers, Tapebooks, Storybooks, and accompanying Teacher's Manual. Also, audio equipment, such as tape players, must be purchased, if the school district does not already have such equipment on hand.

In ordering materials and equipment, the project manager will almost certainly need the help of appropriate central office administrators and the consultation of the developers of the new program.

When the materials shipments are received, they should be checked for correctness and damage and then recorded on an inventory record. Next, the materials need to be distributed to the schools involved in the implementation. There the materials are arranged for use by the pupils and staff and/or stored. For example, in implementing IPI Reading, teacher aides usually unpack the boxes of materials and arrange them on the shelves of the IPI Materials Center. Shelving and file cabinets, in addition to what is already in the schools, are usually needed for setting up the Materials Center.

Shipments of equipment should also be checked, inventoried, and distributed to the appropriate schools. Then the equipment is installed in the locations where the new program will be operated.

The ordering, distribution, and arrangement or installation of materials and equipment needs to be carefully planned and scheduled well in advance, so as not to delay the start of instruction.

The task of arranging for the use of facilities can be divided into four subtasks: (1) specify the facilities required; (2) reserve or schedule the use of required, existing facilities; (3) modify some existing facilities; and

(4) construct new facilities. A given implementation project may involve some or all of these subtasks. For example, implementing IPI Reading may involve the installation of additional electrical outlets and extensions, so that many students may run tape players simultaneously as they work through their "tapebooks".

Although arranging for the use of facilities is the responsibility of the project manager, he will obviously need the assistance of building principals and certain central office administrators.

Operate New Program. -- The third mission in an implementation project is to operate the new program. This mission can be divided into the following tasks: (1) orient the pupils to the procedures of the new program; (2) instruct the pupils under the new program; (3) disseminate information regarding the operation of the program; and (4) modify the program content and/or procedures.

When pupil instruction under the new program begins, each pupil must immediately be oriented to the procedures of the program and to the skills that he will develop as he progresses through the program. For example, in implementing IPI Reading, the pupil must learn where and how to obtain needed materials and help. He may also learn to score his own work and identify specific reading difficulties that he is experiencing. Some of these things will be learned in part during the first-week orientation period, while other skills will not be fully developed until the pupil has had more experience with the program.

After the pupils have been oriented to the program, actual instruction (3.2 in Figure #3) under the new program can begin. This instruction should, of course, closely follow the procedures detailed in the program. In IPI Reading, for example, there are clearly-specified roles for teacher, aide, and pupil. There are also detailed procedures to be followed when moving

through the program. In particular, criteria and procedures for the selection and use of instructional materials by individual pupils are carefully specified. Ensuring that instruction in the program is progressing as designed is one of the important concerns of the manager of an implementation project. This concern is discussed in some detail in the section of this Supplement entitled "Operating an Implementation Project".

The dissemination of information (3.3 in Figure #1) regarding a new program is an important and often time-consuming task. During the implementation, it can be expected that many individuals will want to learn about the program and how it is "working out." The superintendent's office and the school board should receive periodic reports on the implementation. Parents and interested community members will want information on the program and its effects upon the children. Teachers and administrators from other school districts, upon hearing about the program, often will ask for more information. Some may want to visit and see the program "in action." In order to accommodate this expected demand for information, it is advisable to plan for the preparation of periodic internal progress reports and public news releases and for visitations by parents, interested community members and professional educators. The superintendent and other administrators will want to work with the project manager in planning for dissemination.

The content and/or procedures of a new program package are often changed or modified to meet the unique circumstances of a specific school district or school building. Many of these changes will occur toward the end of the implementation project, when it is in a state of transition from a trial or temporary program to an on-going, regular school program. This transition is discussed in some detail in the section of this supplement entitled "Terminating an Implementation Project."

There are other changes, however, that may need to be made during the initial operation of the new program. With most any new program, even though it has been "thoroughly" field tested, unforeseen situations or problems will arise. Maybe something has been overlooked in the development of the materials, or maybe some project staff members have misinterpreted some aspect of the new program. This is to be expected. Therefore, the manager of an implementation project must carefully monitor project activities and plan to conduct periodic meetings or problem-solving sessions to deal with any difficulties that do arise. For example, in implementing IPI Reading the school building principal or project manager is urged to conduct weekly planning sessions. The purpose of the sessions is to provide teachers with feedback on program implementation and an opportunity for continued staff training in the complex skills required by IPI. Sessions such as these offer a fruitful environment for the resolution of problems in the implementation of any new program.

Evaluate New Program. -- The fourth mission is an implementation project is to evaluate the new instructional program. The purpose in evaluating a new program is to provide both summative information regarding the impact of the program upon pupil learning and recommendations for the improvement of the program. If the program has had a negative effect upon pupil skill and attitude development, then the decision will probably be made to discontinue it or to make substantial modifications. But, if the new program has had a positive effect upon the pupils, then a decision might be made to expand the program to other grade levels and/or school buildings within the district.

Regardless of how successful or unsuccessful a new program appears to be, information is needed in the form of recommended changes that will result in an improved program. Such information is usually needed during the

spring and early summer so that the changes can be incorporated into the program plans for the next school year or term. In addition to year-end evaluation, it is often advisable to prepare interim evaluation reports. In this way, important changes can be made when they are needed, rather than waiting until next year.

The evaluation of an implementation project consists of the following tasks: (1) develop the evaluation plan*; (2) obtain or develop measurement instruments; (3) administer the measurement instruments; (4) score and analyze the data; and (5) synthesize the data and report the results. The development of an evaluation plan involves: (1) specifying each program objective in terms of what constitutes achievement of the objective and how that achievement will be measured; (2) determining what measurement instruments will be used or developed; (3) scheduling the administration and scoring of the instruments; (4) stating how the evaluation data will be analyzed; and (5) outlining how the data will be synthesized and reported. All of these evaluation planning activities take place during the planning phase of an implementation project. The actual obtaining or development of measurement instruments takes place in the preparation phase. The administration and scoring of the instruments, analysis of data, and synthesis and reporting of results occurs in the project operations phase.

The project manager will probably want to involve the district's research and evaluation office in planning and conducting the evaluation of the implementation project. Outside evaluation consultants may also be helpful.

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*The Administering for Change Program of Research for Better Schools, Inc. is currently developing a School Evaluation Kit which provides guidance to school administrators in the planning and development of suitable strategies for the evaluation of curricular programs.

Work Flow

The second step in project planning is the development of a work flow which is usually presented in the form of a work flow diagram. This diagram illustrates the sequence in which project activities are accomplished and the interrelationships that exist among the many activities. Determining the sequence for the performance of project activities is very important, since many activities cannot begin until certain others have been completed.

The work flow diagram should include all the activities appearing at the lowest level in the project work breakdown structure. Depending upon the project, the work flow diagram may appear quite complex. For simplicity, the sample work flow diagram for an instructional program implementation project, presented in Figure #4*, is based upon the task level of the work breakdown structure in Figure #3. A complete work flow diagram based upon the subtask level of the WBS appears in the appendix.

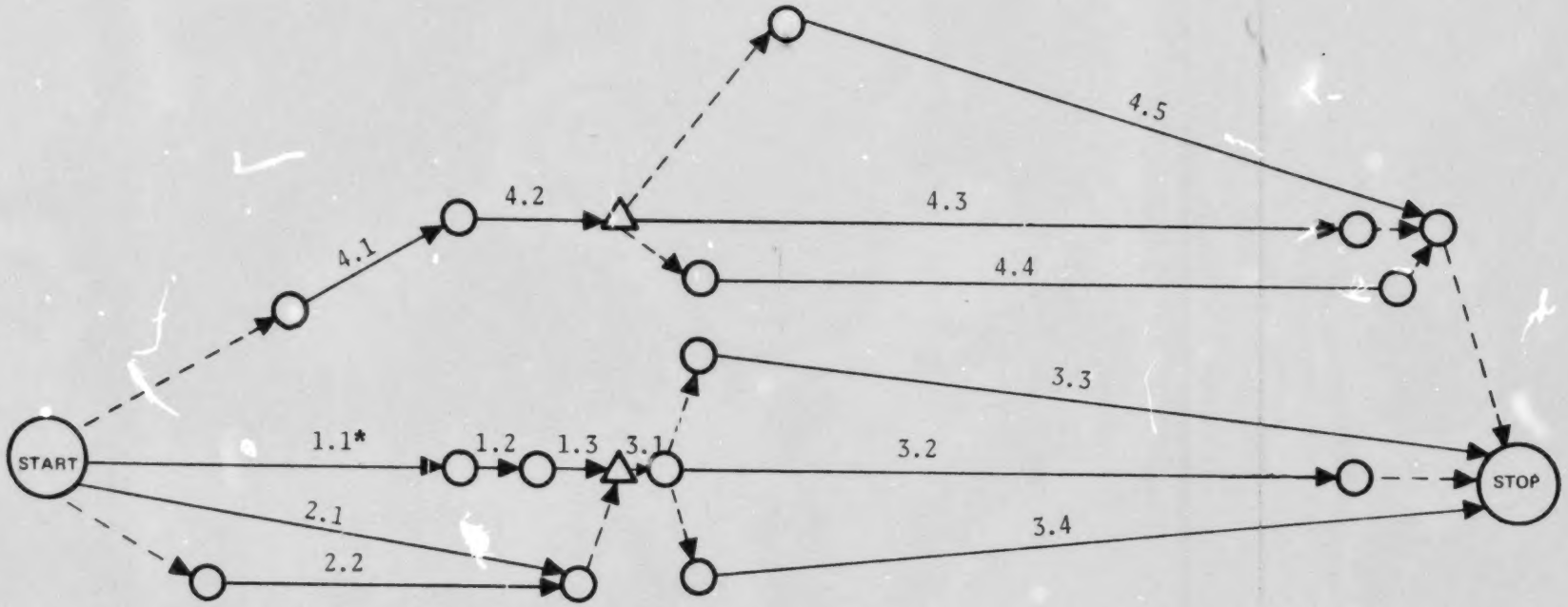
From any given WBS, any number of work flow diagrams are possible. One of the primary tasks of the project manager is to find the best possible work flow diagram, and to modify that diagram as the project proceeds. This is discussed in detail in Module 2 of EPMIS.

The superintendent and/or other central office administrator and principals can help the project manager by reviewing the sequence of project tasks represented in the work flow diagram.

Time Estimation and Scheduling

The third step in project planning is the estimation of the time required

*If you are not familiar with work flow diagrams, Figure #4 may appear at first to be a bit confusing. The construction and use of work flow diagrams is detailed in Project Management Basic Principles developed by the Administering for Change Program of Research for Better Schools, Inc. The project manager of an implementation project should be familiar with them.



WORK FLOW TASK NUMBERS AND DESCRIPTIONS

Task Number*	Task Description	Task Number	Task Description
1.1	Obtain staff	3.3	Disseminate information
1.2	Train staff	3.4	Modify program content and/or procedures
1.3	Orient persons not directly involved	4.1	Develop evaluation plan
2.1	Obtain, distribute, and install materials and equipment	4.2	Obtain or develop measurement instruments
2.2	Arrange for the use of facilities	4.3	Administer measurement instruments
3.1	Orient pupils	4.4	Score and analyze data
3.2	Instruct pupils	4.5	Synthesize and report results

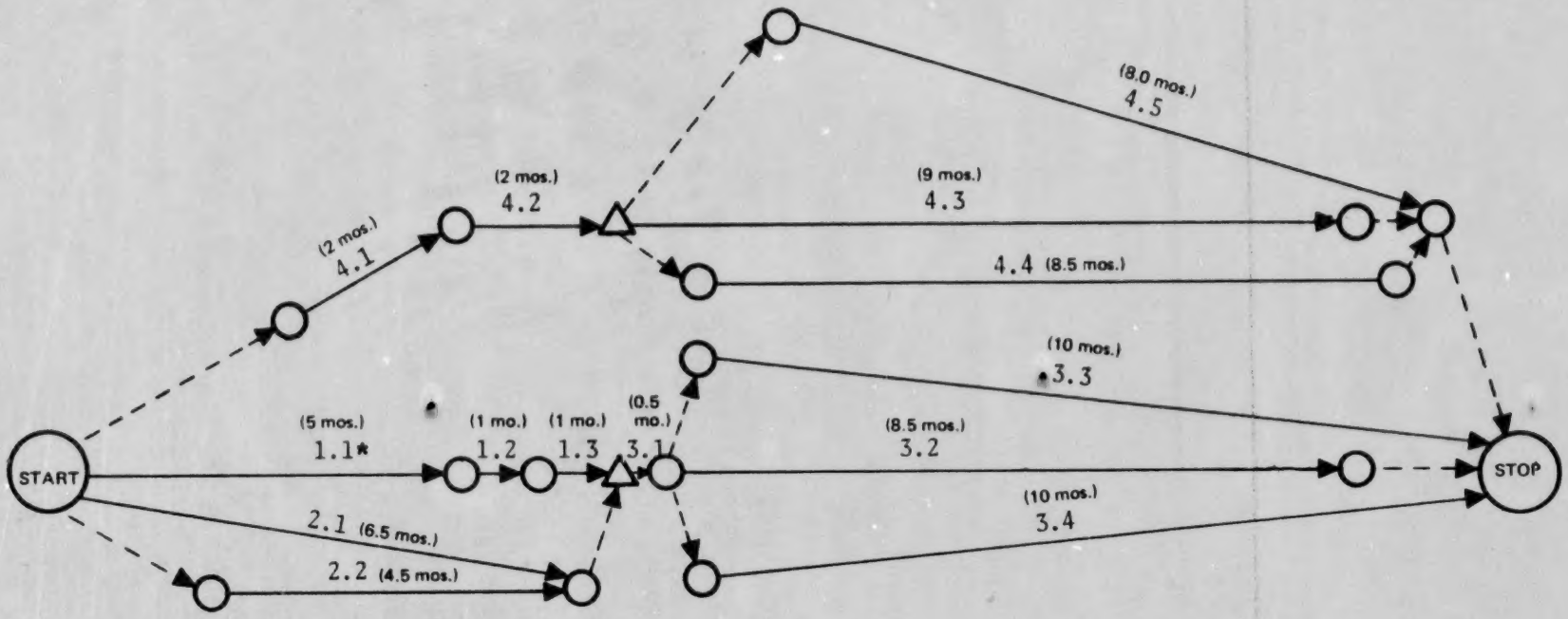
* The task or activity numbers correspond with the task numbers in the work breakdown structure appearing in Figure #3.

Figure #4--Sample Work Flow Diagram for an Instructional Program Implementation Project

to complete each project activity, the determination of the total time for the completion of the project, and the specification of the calendar dates for project activities. In the case of an implementation project, the time for completion of the project may be fixed. For example, planning activities may begin in the spring, preparation activities may be conducted in the summer, the actual operations may begin when school starts in September and the entire effort may end when school lets out in early June. In such a project, certain fixed events, such as the start of school, act as constraints and are represented as milestones (triangles) on the work flow diagram. After time estimates have been made for all project activities, the time for the completion of the milestones is determined by adding task times along the critical path to the milestones. Then, if these times are beyond the specified milestone deadlines, either the sequence of prior activities must be altered or the time estimates for activity completion must be adjusted. For example, if the new program is to begin operation on September 5, preparation activities such as the ordering, receiving, and distributing of materials must be schedule so that they are completed prior to that date.

Once the project time estimates are made, they should be entered on the work flow diagram above each activity. A sample work flow diagram including time estimates for an implementation project is presented in Figure #5. This diagram also contains a calendar date line (project time line) and thus represents the time estimation and scheduling of project activities.

The superintendent and/or central office administrators and principals can help the project manager by reviewing his time estimates and the overall project schedule.



Project Time Line

Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July

WORK FLOW TASK NUMBERS AND DESCRIPTIONS

Task Number*	Task Description
1.1	Obtain staff
1.2	Train staff
1.3	Orient persons not directly involved
2.1	Obtain, distribute, and install materials and equipment
2.2	Arrange for the use of facilities
3.1	Orient pupils
3.2	Instruct pupils
3.3	Disseminate information
3.4	Modify program content and/or procedures
4.1	Develop evaluation plan
4.2	Obtain or develop measurement instruments
4.3	Administer measurement instruments
4.4	Score and analyze data
4.5	Synthesize and report results

* The task or activity numbers correspond with the task numbers in the work breakdown structure appearing in Figure #3.

Figure #5--Sample Work Flow Diagram with Task Time Estimates and Project Time Line for an Instructional Program Implementation Project

Resource Estimation and Scheduling

The fourth step in project planning is resource estimation and scheduling. This involves (1) estimating the resource needs of each project activity, (2) leveling the resource utilization rate for each time period of the project, and (3) scheduling the resources.

Estimating the resource needs for an implementation project may require the assistance of others who have implemented a similar program, or consultation with the developers/disseminators of the program. For example, in implementing IPI Reading, a new role of teacher aide is introduced. Estimating the number and type of staff members required for the task "instruct pupils" will more than likely require consultation with the field staff who help to disseminate and implement the program. Help will also be needed in determining the type and amount of materials that will be needed to "instruct pupils."

After the resource needs of each project activity have been determined, the rate of resource utilization can be leveled, so that an excessive amount of resources is not required one week and none required the next. Resource leveling may involve changing the work flow and time estimates for some activities.

The next step is scheduling the resources. This refers to the assignment of calendar dates for the utilization of the resources associated with each project activity. For example, implementing IPI Reading in a particular school district may call for the utilization of teacher training materials beginning on July 1 and continuing throughout the project, whereas, pupil notebooks, tapes, etc. may not be used until September 5. Calendar dates must be assigned to these resources so they can be ordered and delivered in advance of the time when they will be needed.

The superintendent and/or other central office administrators and principals can help the project manager by supplying him with some of the information necessary for making accurate resource estimates and by reviewing the total resource utilization schedule.

Cost Estimation and Budgeting

Cost estimation and budgeting, the last step in project planning, involves the estimation of the cost of each project activity, and of the total project, and the preparation of a budget document showing items such as teacher salaries and benefits. Some of the cost estimates can be made by referring to school district records. Others will require that decisions be made. For example, if implementing IPI Reading means that the district must hire a certain number of teachers aides, a decision as to how much the aides will be paid must be made. Some cost estimates will required information from the developers/disseminators of the new program. For example, the cost of materials for staff training and pupil instruction is usually obtained from the program disseminators.

Resource cost estimates should be summarized by project activity as well as by resource type. That is, a cost estimate should be made for each project activity or task, as well as for each project resource type. For example, in planning the implementation of IPI Reading, a cost estimate should be made for the task "train staff." This cost estimate is the sum of the cost estimates for each of the different resources used to complete the task. Such costs as staff pay and benefits, travel and training materials are included. Having cost estimates for each project task allows the project manager to control the cost of performing them once work has actually begun. These cost estimates are summarized in an objective- or task-

oriented budget.

It is usually necessary to prepare a budget document that summarizes cost estimates for each project resource type. This is the typical line item budget with entries for personnel, materials and supplies, equipment, travel, services and indirect costs. This type of budget is needed if the school district customarily budgets in the line item format. If outside funding for the implementation project is sought, the necessary proposal document may require both a typical line item budget and an estimate of the cost of each project task and/or mission.

The completion of the budget documents completes the planning phase of an implementation project. The information and documents generated in this phase, taken together, constitute the project plan. This plan should be submitted to the school board or appropriate authority for review and approval. Upon approval of the plan, the project moves into the preparation phase.

The superintendent and/or other central office administrators and principals can help the project manager with cost estimation and budgeting by supplying any cost information they may possess and by reviewing the final proposed budget.

Preparing for Implementation

The preparation phase is the second phase of the project management process. The activities involved in the preparation phase of an implementation project are: (1) obtain staff, (2) train staff, (3) orient persons not directly involved, (4) obtain, distribute and install materials and equipment, (5) arrange for the use of facilities, (6) develop evaluation plan, (7) obtain or develop measurement instruments, and (8) develop an information system for control of project operations. The first seven of these

activities were discussed in the previous planning phase section of this supplement. This section is devoted to a discussion of the development of an information system for an implementation project.

Successful operation of an implementation effort, once underway, depends to a great degree upon the project manager and staff knowing both what should be happening, what is actually happening and who should make it happen. This is usually accomplished with a procedure or operation commonly identified as a project information system. A project information system consists of three components -- the project data base, organizational charts, and the project handbook. Each of these components is discussed in the sections which follow.

Project Data Base

The basic function of the project data base is to accumulate in one place all of the initial schedule, budget, and task performance decisions made during project planning. This permits the project manager to have ready access to the basic or initial planning decisions which reflect what should be happening and who should be making it happen.

Some of the types of information that should be included in the data base for an implementation project are listed below.

- o statements of the project goal and objectives
- o descriptions of the project tasks
- o the work breakdown structure
- o the work flow diagram
- o the task time schedule
- o identification of milestones

- o resource requirements
- o the budget and expenditure plan

All performance, time, and cost data that have been generated for each project task and for the total project should be included. For example, if one of the tasks is "train teachers", then the following information regarding the task would be part of the data base:

- o the instructional objectives
- o how the training will be accomplished
- o who will do the training
- o who will be taught
- o when the training will take place
- o where the training will take place
- o what resources are required
- o what dollar costs will be incurred
- o how it will be known when the training task is completed

With this kind of detailed information, the project manager can monitor the training process and know if it is deviating from what was planned.

Organizational Charts

The second component of the project information system involves the development of a project organizational chart. The function of an organizational chart is to show authority and responsibility for project staff and to show reporting channels for the flow of information.

Consider an implementation project such as the implementation of IPI Reading in an intermediate size school district "X". Suppose that the district has decided to implement the program in grades one through six in five

buildings (A, B, C, D and E), representing different types of student populations from different neighborhoods. Also, suppose the district's Coordinator of Elementary Education has been chosen to coordinate or manage the implementation. A suggested organizational chart for such an implementation project is pictured in Figure #6.

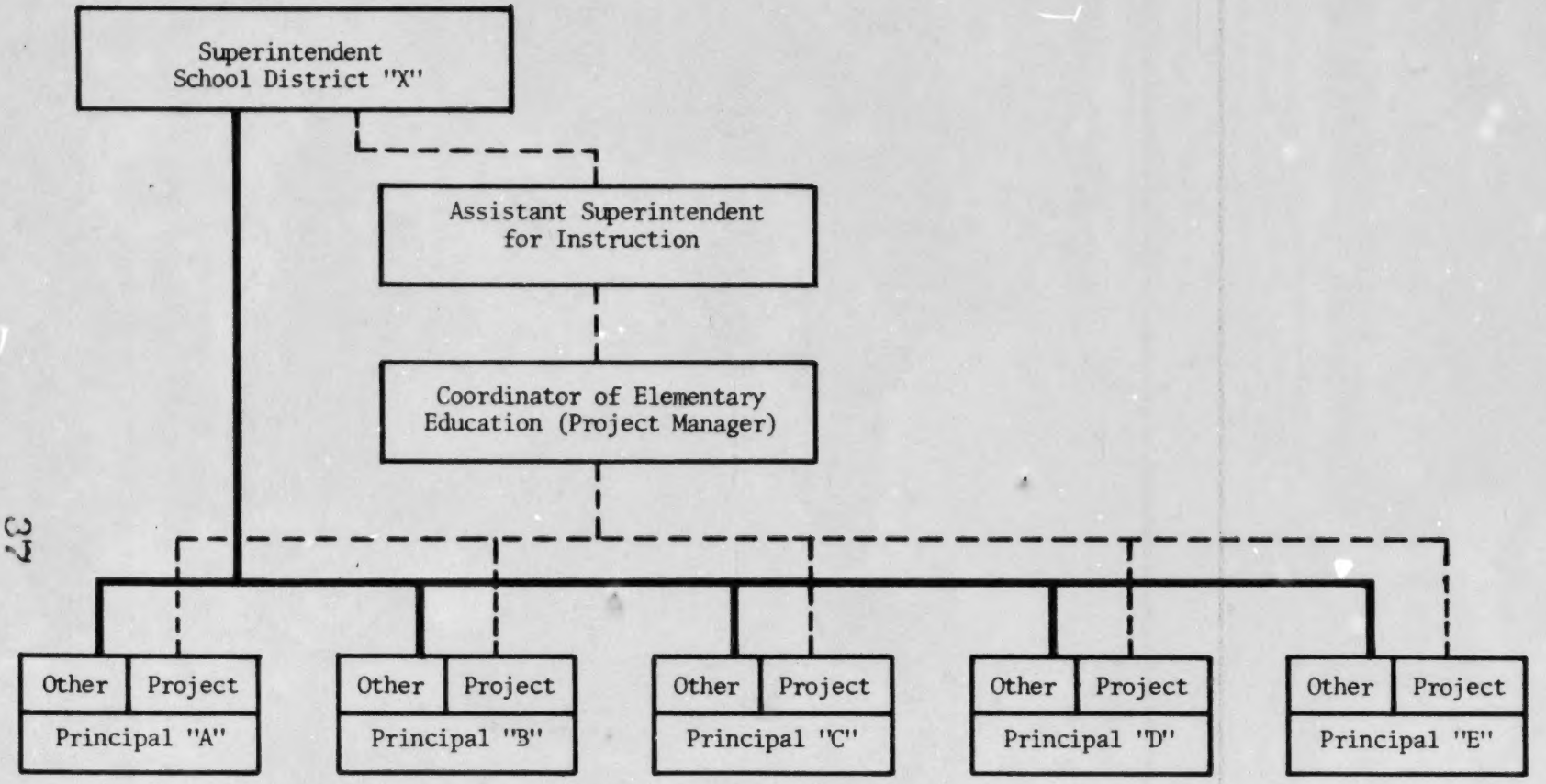
In order to help clarify project authority and responsibilities, a management responsibility guide is often developed. The guide is a useful device in preventing project tasks from being overlooked because no one is charged with the authority or responsibility for their execution. A sample portion of a possible management responsibility guide for the IPI Reading implementation project described above is pictured in Figure #7.

The Project Handbook

The purpose of the project handbook is to facilitate staff operation and communications. The handbook should contain such items as: (1) general background information regarding the project and its environment or setting, (2) the project organizational chart, (3) reporting formats and schedule, (4) staff meeting schedules, (5) travel arrangement information, and (6) project task schedules.

In implementing IPI Reading, for example, the project handbook might include the following:

- o the names of the schools involved in the project
- o the grade levels involved
- o a project staff directory
- o a project organizational chart (like the one in Figure #6)
- o the project management responsibility guide (like the one in Figure #7)



- - - - Dotted lines indicate line relationship in the function of supervising instruction.

——— Solid lines indicate line relationship in other administrative functions.

Figure #6--Suggested Organizational Chart for IPI Reading Program Implementation Project

TASK DESCRIPTIONS	POSITION TITLES: Coordinator of Elementary Education (Project Manager)	Building Principals	Elementary Teachers	Aides	RBS Consultants
Train Teachers	G	O			Y
Order Materials	G, O	S			Y
Instruct Pupils	G	G	O	S	Y

RESPONSIBILITY RELATIONSHIP CODES

Code	Meaning	Explanation
G	General Responsibility	Individual guides and directs execution of the function through the person delegated operating responsibility and has approval authority over the function.
O	Operating Responsibility	Individual is directly responsible, at the operating level, for execution of the function.
S	Specific Responsibility	Individual is delegated responsibility for execution of a specific or limited portion of the function.
Y	May Be Consulted	Individual may be called in to confer, relate information, render advice or make recommendations.

Figure #7 - Sample Portion of a Possible Management Responsibility Guide for an IPI Reading Program Implementation Project.

- o the format for reports that are to be submitted by the building staffs to the project manager
- o the schedule for submitting reports to the project manager
- o the schedule for the Planning Sessions
- o details regarding travel and accommodations for the staff training session in the summer
- o the schedule for the training session
- o the schedule for the arrival of materials and equipment at the school buildings

Copies of this handbook should be distributed to all members of the project staff. As project activities move along, it is likely that the handbook will need some modifications or additions in order to be kept current. For example, in IPI Reading implementation, information and procedural modifications made during the Planning Sessions should be added to the handbook. Therefore, project handbooks are often kept in loose-leaf form.

Implementation Operations

The operations phase is the third phase of the project management process. The project activities that occur in the operations phase of the implementation project are: (1) orient the pupils to the procedures of the new program, (2) instruct pupils under the new program, (3) disseminate information regarding the operation of the program, (4) modify the program content and/or procedures, (5) administer measurement instruments, (6) score and analyze evaluation data, and (7) synthesize the data and report the evaluation results. Each of these activities has been discussed previously in the section entitled "Planning Implementation." The concern of this section is with the monitoring and control function that must be performed in

order to ensure that these activities of the operations phase are performed properly.

Regardless of the best planning and preparation efforts, operations do not always go as planned. Thus, the project director must have a system or procedure for knowing the status of the project at all times. The project information system discussed in the previous section is useful in this regard.

The monitoring and control of project operations is basically a problem-solving process consisting of the following steps: (1) the identification of a problem, (2) the generation of alternative solutions and selection of a most desirable solution, (3) the implementation of the desired solution and the communication of changes in operations to the project staff and other affected offices. This three-step process is repeated throughout the operations phase of the project.

In almost any implementation project, it can be expected that some significant problems will occur. These problems are discovered by comparing progress reports on the actual operation of project activities with the project plan. The progress reports may be formal or informal, written or oral, and should be tailored to the needs of each implementation project. For example, in implementing IPI Reading, a school district may want to use a modification of the monitoring instrument "SIGNS", developed by Research for Better Schools, Inc., as a basic reporting procedure. By using this instrument, a school district can collect information on the operation of an IPI program that is needed in order to decide if the implementation is going according to plan.

The following example will help to illustrate the three-step monitoring and control process as it operates in an implementation project. Assume again that an intermediate-size city school district is implementing IPI Reading

in grades 1-6 in five school buildings (A, B, C, D and E). Also, suppose the project manager (Coordinator of Elementary Education) and building supervisors (principals) are using the "SIGNS" instrument as a basic reporting device on a periodic basis. In addition, the project manager and principals have developed other procedures for monitoring different aspects of the implementation. For example, they have developed a materials inventory control system that allows them to know the type and numbers of materials in stock in each building and to compute the rate of consumption on a monthly basis.

Implementation had begun in September and it is now the first week in November. The project manager is reviewing the progress reports submitted to him by the five building principals. The principal of Building C indicates in his materials inventory report that his school is beginning to run low on some of the materials in the Primary Reading Program (grades 1-3). He asks whether or not this is to be expected.

The project manager immediately compares the inventory figures of School C with those of Schools A, B, D and E and discovers that C has a substantially lower stock of Primary Reading Materials than the other schools. This condition still may not represent a problem. The project manager next examines the school profile for School C contained in the SIGNS instrument report. From this profile he finds that many more pupils in School C have units of work yet to be completed in Primary Reading than there are materials for. The first step of the problem-solving control process has been completed -- a problem has been identified.

The next step in this process is to generate alternative solutions to the problem and to select a best, or most desirable, solution. It is usually

necessary to determine the cause of a problem before effective solution alternatives can be generated. Therefore, the project manager's next step is to work with the principal of School C and his staff in determining why the school has run short of primary reading materials. A recheck of the initial inventory, purchase orders and school reading achievement levels indicates that the correct number and type of materials were ordered, received and distributed to the school. Further investigation leads the project manager and principal to an examination of the placement of pupils into IPI Reading in September based upon their pre-test performance. This examination reveals that many of the fourth and fifth grade pupils were placed in the IPI Reading Program at a level that is conventionally termed a second or third grade reading level. Some of this was expected based upon previous school-wide reading achievement test data. Further investigation indicates, however, that many of these pupils are new to the school, having moved into the school's attendance area during the summer. Such mobility is not uncommon in this part of the city. Thus, the cause of the problem appears to be a combination of some previous inaccuracy in the measurement of reading achievement levels in the school plus an influx of low reading achievement pupils during the summer months. This information forms the basis for discussing alternative solutions for the shortage problem. It will also be helpful in avoiding similar problems in the future.

Next, the project manager and his staff must specify the ends or results they want to achieve by a solution to the problem, and then generate alternatives that will meet those specifications. They specify that School C must have certain numbers of particular materials within ten school days. They would like to minimize cost and still obtain high-quality materials that are easy to read and use.

They begin to generate alternatives such as: (1) order the needed materials, (2) make copies of the needed materials, (3) borrow the materials from other schools, and (4) borrow the needed materials and order replacements for the other schools. They then compare each alternative with the needs or musts and the likes previously specified. The first alternative is rejected because the ordering, shipment, and distribution of materials will take longer than the required ten school days.

The second alternative may work, although the cost of copying and assembling materials will be high, and the quality of the product may be less than desirable. Also, there is the question of the legality of copying the materials for large-scale use. Thus, the second alternative does not appear to be very favorable to them.

The third alternative is rejected because, if School C borrows materials from the other schools, they will then run out of materials.

The fourth alternative satisfies all the specified needs, in that School C will get the needed materials within ten school days and the other schools will receive replacement copies before they run out of materials. This alternative also satisfies the like's, in that the cost will be minimal and the quality of the materials obtained will be equal to that of the present materials. Thus, they choose the fourth alternative over the second. The second step in the problem-solving control process has been completed.

The final step in the control process is to implement the chosen solution and communicate the changes involved to the project staff and appropriate school administrators. There are a number of details that must be worked out in order to implement the decision that the project manager and principals have chosen. For example, the following questions must be answered: "What materials will be borrowed? How many copies of each will be borrowed? How

many copies will the different schools lend? Who will be responsible for getting the materials together in each school?

The transport of these materials between the school buildings will require certain authorizations and directions. In addition, the order for the replacement materials must be placed rapidly. This may require special efforts on the part of the project manager in facilitating the processing of the order form and purchase order by several district offices or departments. The cooperation and support of various central office administrators is necessary for the smooth implementation of corrective action in solving project operational problems.

After the solution has been implemented, the project manager follows up on the implementation to ensure that it has gone according to plan. He checks to see that School C has received the needed materials from each of the other schools, and he checks to see that the shipments of replacement materials has been received when expected. The final step in the problem-solving control process, solution implementation, has now been completed.

This three-step process of monitoring and controlling project operations continues throughout the operation of the project. In the example above, it may happen that the school profiles at the end of the first semester show that pupils in one of the better schools (in terms of reading achievement) are not showing the expected gains under the new program. Pupils there may even appear to be improving their reading skills at a level comparable to that in the "average" schools. Such a finding might lead the project manager and building principal to observe classroom activities and procedures more carefully than they normally might. As a result, they might discover a hard-to-find problem, such as a lack of individualization of student learning prescriptions. Teachers may be having many pupils complete all instruc-

tional materials, thereby not individualizing the instruction of the pupils and slowing down the learning of the more able students. As a result, the quality and speed of pupil learning suffers.

The development and operation of a monitoring and control system is an absolute necessity when implementing any new instructional procedure or program. A reporting system that makes effective project monitoring and control possible must be carefully designed.

Terminating Implementation

The termination phase is the fourth and final phase of the project management process. Project termination is concerned with the ending of the project effort. In most cases this involves either the phase-out (closing-out) of the project or the transition of the project into an on-going, regular school program. In some cases this transition itself is large, complex, and uncertain enough to be treated as a project. An implementation project can be thought of as such a project. That is, an implementation project is a project whose concern is with the transition of a program from the status of a trial program to that of an on-going sub-program within the overall instructional program of the school. Thus, by definition, the ending or termination of an implementation project represents the final stages of transition, rather than any phase-out or ending of project activities. Most of the operational activities continue, but they continue as regular program activities.

An implementation project may be in operation for any reasonable length of time. If an implementation begins in September, a school district may decide to run the project for one year. That is, the new instructional program is to be considered as part of the regular program when school begins

the following September. Or, the district may decide that the implementation of a particular program will require two or three years. Whatever the case, when the time comes for the ending of the project and the beginning of the on-going, regular program, there are certain tasks that need attention. Among these are informing project personnel of final transition procedures; preparing a final report for the funding source (school board, state department of education, etc.); retaining important records, reports and similar documents; writing a project history for reference by future project directors; and planning the first year of operation as a regular program. These tasks are discussed below.

Inform Project Personnel

All project staff should be informed of any changes in program operations that will come about as a result of the ending of project status. For example, in implementing IPI Reading, a district may decide to use fewer or more teacher aides the next year, or schedule class sessions in both the mroning and afternoon so that full-time personnel may fill the aide role as well as part-time personnel.

Project staff members also must be informed of their roles in the final transition tasks, such as preparing the project history or planning for the following year.

Prepare the Final Report

The school board and the public should receive a final report on the project's successes and failures. If the implementation project was funded by an outside source, that funding source will certainly require a final

report. The final results of the new program's evaluation will be an important part of the final report. Recommendations for the program modification and improvement should also be included.

The superintendent and/or other central office administrators should carefully review the project final report. This is especially important if the project involved the use of funds from outside the district.

Retain Important Records and Documents

Whether or not the project was funded by an external source, certain records and documents should be retained. For example, items such as expenditure records, personnel records, correspondence noting major project changes, progress and final reports, and summary test data should probably be retained. For example, in implementing IPI Reading, the retention of student reading achievement data in each school building is necessary for accurate planning, and for ordering the correct amounts of the various materials for the following year. Also, the analysis of personnel records may provide information on what type of experience and training is likely to make good teacher aides. Such information will be invaluable when it comes time to implement another new program, such as IPI Science.

The project manager may want the advice of certain central office administrators in determining which records and documents are required by the district and which other documents would be valuable or useful.

Write the Project History

The project history provides a documented, written record of the history of the project from its creation to its termination. Properly prepared, it

can be quite helpful in planning the implementation of other new instructional programs by providing information derived from experience regarding dimensions of uncertainty. For example, the experience gained in estimating material needs for IPI Reading could be helpful to those charged with ordering materials for the implementation of IPI Math. Also, experience gained in working with teachers on individualizing student learning prescriptions could be helpful to principals and coordinators who are managing another IPI implementation.

Plan for Next Year

Plans for operating the new instructional program in its first year as a regular program have to be made. Much of this planning is done toward the end of the implementation project. For example, suppose a school is implementing IPI Reading this September and plans the final transition into a regular, on-going program for the following September. Then many planning activities for the on-going program will begin in the spring. For example, materials will probably be ordered in May and additions or modifications in the program procedures and/or content based upon evaluation results should be detailed in May or June, so that they can be included in the teacher training program scheduled for July or August. Any changes that call for modification of classrooms certainly must be made by May or June, since the work will almost certainly be done in July or August. Some final modifications may, of course, not be made until July due to the heavy schedule for school staff that is usually associated with the end of the school year.

Planning for the next year of operation should involve project staff at all levels. Teachers will have valuable information inputs, while principals

and curriculum supervisors are in a position to look at the larger picture and make recommendations for change in the overall operation of the new program. The advice, approval and support of the superintendent and/or other central office administrators is beneficial, if not necessary, for the effective implementation of desired changes for the next year.

IV. Conclusion

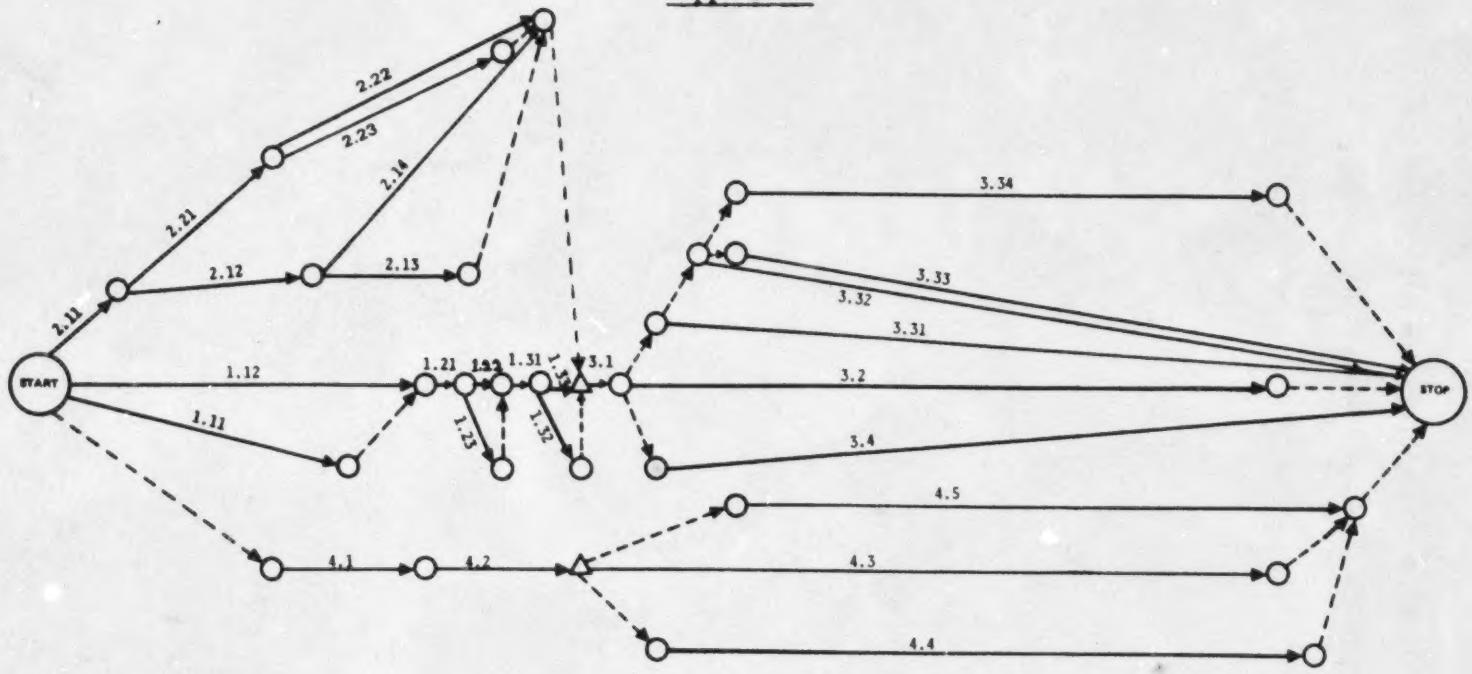
An effort to introduce a new instructional program or a major instructional program modification into one or several school buildings fits the definition of a project. Consequently, such efforts, sometimes termed "implementation projects," can benefit from being directed or managed from the project management viewpoint. This involves the employment of specific project management skills and techniques as the project moves through the four phases of the project management process -- planning, preparation, operations, and termination.

The planning phase involves developing a project definition, work flow diagram, time and resource estimates and schedules, and a project budget. The preparation phase involves obtaining and training staff, orienting personnel, obtaining and distributing materials and equipment, arranging for the use of facilities, developing an evaluation plan, obtaining or developing measurement instruments, and developing a project information system. The operations phase involves orienting and instructing pupils, disseminating information, modifying program content and/or procedures, administering measurement instruments, scoring and analyzing evaluation data, and synthesizing data reporting results. The termination phase involves informing project personnel of changes, preparing a final report, retaining important records and documents, writing a project history, and planning for next year.

If you desire to learn more about the management of an implementation project, you might want to contact the Administering for Change Program of Research for Better Schools, Inc., Philadelphia, Pa. 19103 or the Educational Program Management Center in the College of Education of The Ohio State University. Also, you may want to contact the Business Administration or

Educational Administration department of a nearby college or university. Many state departments of education also provide information and assistance concerning the implementation of a new instructional program.

Appendix



Project Time Line

Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July

WORK FLOW TASK NUMBERS AND DESCRIPTIONS

Task Number	Task Description
1.11	Obtain Teaching Staff
1.12	Obtain Support Staff
1.21	Train Administrative Staff
1.22	Train Teaching Staff
1.23	Train Support Staff
1.31	Orient Non-Involved Administrators and Teachers
1.32	Orient Parents
1.33	Orient Community Members
2.11	Order Materials and Equipment
2.12	Check and Inventory Materials and Equipment Received
2.13	Distribute and Arrange Materials
2.14	Install Equipment
2.21	Specify Facilities Required
2.22	Reserve and Schedule Existing Facilities
2.23	Modify some Existing Facilities
2.24	Construct New Facilities
3.1	Orient Pupils
3.2	Instruct Pupils
3.31	Report to Superintendent and School Board
3.32	Report to Non-Involved Administrators and Teachers
3.33	Report to Parents and Community
3.34	Conduct Visitations
3.4	Modify Program Content and/or Procedures
4.1	Develop Evaluation Plan
4.2	Obtain or Develop Measurement Instruments
4.4	Score and Analyze Data
4.5	Synthesize and Report Results

Detailed Work Flow Diagram with Project Time Line for an Instructional Program Implementation Project